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(74) Agent: **CLARKE, Alan**; QinetiQ Ltd, IP Formalities,
Cody Technology Park, A4 Building, Room G016, Ively
Road, Farnborough, Hampshire GU14 OLX (GB).

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(71) Applicant (for all designated States except US): **QINETIQ LIMITED** [GB/GB]; Registered Office, 85 Bucking-
ham Gate, London SW1E 6PD (GB).

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(72) Inventors; and

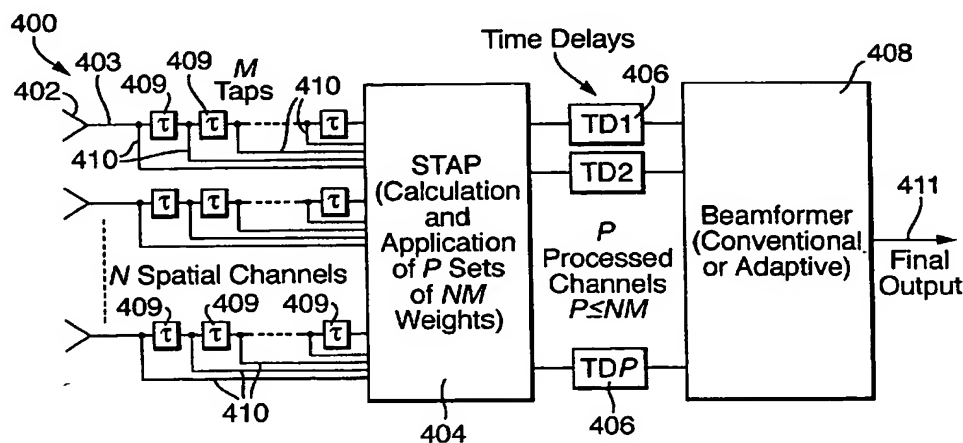
(75) Inventors/Applicants (for US only): **RICHARDSON, Peter, Graham** [GB/GB]; QinetiQ Limited, St Andrews
Road, Malvern Worcs WR14 3PS (GB). **HERBERT, Geoffrey, Martin** [GB/GB]; QinetiQ Limited, St Andrews
Road, Malvern Worcs WR14 3PS (GB).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: TIME DELAY BEAMFORMER AND METHOD OF TIME DELAY BEAMFORMING



(57) Abstract: A time delay beamformer (400) comprises input channels (402), which have associated samplers (410) arranged to sample inputs signal carried upon the input channels (402). The samplers (410) sample the input channels (402) at a number of points in time to produce a number of sampled signals. An adaptive processor (404) receives each of the input signals and each of the sampled signals, and generates processed signals therefrom. Time delay devices (406) introduce a steering time delay to the processed signals and a summer (408) generates a beamformed output signal the delayed processed signals.

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INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01S13/524 G01S13/44 H01Q3/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01S H01Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KLEMM R: "Prospectives in stap research" PROCEEDINGS OF THE 2000 IEEE SENSOR ARRAY AND MULTICHANNEL SIGNAL PROCESSING WORKSHOP, CAMBRIDGE, MA, USA, 16-17 MARCH 2000, 16 March 2000 (2000-03-16), pages 7-11, XP010516038	1-5, 9-12, 15-18, 28
Y	page 9 - page 11 abstract ----- -/-	7, 8, 13, 14, 20-22, 26, 27

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *&* document member of the same patent family

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

von Walter, S-U

INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ZATMAN M ET AL: "Time delay steering architectures for space-time adaptive processing" ANTENNAS AND PROPAGATION SOCIETY INTERNATIONAL SYMPOSIUM, 1997. IEEE., 1997 DIGEST MONTREAL, QUE., CANADA 13-18 JULY 1997, NEW YORK, NY, USA, IEEE, US, 13 July 1997 (1997-07-13), pages 2426-2429, XP010246697 ISBN: 0-7803-4178-3 the whole document	7,8,13, 14, 20-22, 26,27
A	US 4 544 927 A (GABEL ROBERT A ET AL) 1 October 1985 (1985-10-01) column 4, line 67 - column 9, line 16 figures 2,4-13	1-22, 26-28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/001189

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see annex

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-22,26-28

A time delay beamformer including steering time delay means

2. claims: 23,24

A method of reducing the computational load associated with beamforming

3. claim: 25

A method of increasing the resolution of a sideways sensing sensor array

INTERNATIONAL SEARCH REPORT

International Application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4544927	A	01-10-1985	NONE